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ABSTRACT

The introduction of communications and information technologies in the area of education tends to create a totally different environment, which is marked by a change of the teacher's role and a transformation of the basic components that make up the meaning and content of the learning procedure as a whole. It could be said that, despite any changes, this training process is subject to a "tayloristic" linear model of production that takes the student at childhood and gives him back to society and the dynamics of the market with the hope that he will be able to respond creatively to the constantly increasing demands. As the student moves down the school assembly line, teachers at various levels give him the knowledge that has been worked out for each level in a predefined and uniform way. This paper asks the question: is the introduction of training technology going to help reverse this closed model of training process or is it just going to modernize the ways and methods, keeping the main body of the training assembly line unchanged? Discussion includes characteristics of the conventional-linear model of education; the new hybrid type learning environment; and requirements for the development of an open learning environment. (Contains 12 references.) (Author/AEF)

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The Educational Process in the Emerging Information Society: Conditions for the Reversal of the Linear Model of Education and the Development of an Open Type Hybrid Learning Environment

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Abstract: The introduction of communications and information technologies in the area of education tends to create a totally different environment, which is marked by a change of the teachers' role and a transformation of the basic components that make up the meaning and content of the learning procedure as a whole. We could say that, despite any changes, the training process is subject to a tayloristic linear model of production, which takes the student at childhood and gives him back to society and the dynamics of the market with the hope that he will be able to respond creatively to the constantly increasing demands. As the student moves on the school assembly line, the teachers at the various levels give him the knowledge that has been worked out for each level in a predefined and uniform way. Is the introduction of training technology going to help reverse the closed model of training process, as we have known it up to now, or is it just going to modernize the ways and methods, keeping the main body of the training assembly line unchanged?

1. Introduction

In an era that everything around us is changing at incredibly fast rates, the contemporary human being as well as the social structures that he has built during the ages, are trying to cope with the new demands that are being created. A peculiar technological environment covers the current borders of conventional reality, which seems to retreat scared, yielding more and more vital space to the new information age. Computer systemsare at the peak of technological development, as they constitute the most characteristic advanced party of the new age. From large, hard to use and complicated computing systems, we passed to the era of the personal and easy to use PC which invaded our offices and became an integral part of our daily working life. PCs were equipped with advanced communication capacities and transformed from a medium for facilitating the management function of a business, to a mechanism for interconnecting users with innumerable data and information sources with the help of the Internet. The mass production of PCs at reasonable prices for the average consumer set the basis for the penetration of new technologies into the everyday life of the contemporary human being. Nowadays, the use of a PC not only in the office but also at home is so common, that many people find it hard to distinguish the borders between their business and social life. A lap-top connected to the internet with the help of a mobile telephone can accompany us wherever we go, whatever we do. The

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basic relationship between the human being and information is reversed (Anastasiades,2000). The information nowadays travels through networks towards people who are looking for it from a fixed geographical point via their personal computer. The same applies to merchandise, to consumer goods, to studies, training, work and even entertainment. Electronic networks will partly replace transport by land, air and sea and will further develop into information highways reaching every household. The Information Society does not lie in the distant future, we already live in and experience it through a many of its applications. The education sector is one of the Information Society's main priority, one of the most important pillars of the new digital age (COM (96), 471 final). The Information Society is based on the informed citizen, on the person who knows the advantages and the challenges of the new era, as well as the ways with which he will seize the opportunities which will be presented to him. The Information Society is based on the aware citizen, on the human being who will be aware of the negative consequences of the advent of the new electronic reality and who will seek ways to avoid or to reduce the possible consequences. The Information Society needs all the citizens without exceptions and exclusions, as it concerns all of us, and affects all sectors of human activity (COM (95), 590 final). The velocity with which new applications are transferred from a company's laboratory to our everyday life is incredible. The downgrading of the basic cognitive competencies of modern human beings, is taking place in a much shorter period of time than in the past, and as a result nowadays entire age groups are threatened by labour extinction if they do not adjust to the new circumstances within the shortest possible period of time. The demand for continuous adjustment to what is "new", is pushing an entire era to its limits, an era that tries with dismay to synchronize itself with the dictates of an entirely different reality. The educational process is presented as the most important tool in the context of transformation towards the Information Society, as its role is to ensure for the citizen all the necessary means in order to manage in a completely different environment, a characteristic feature of which is the continuous effort for creative integration in a rapidly changing world.

2. Characteristics of the conventional – linear model of education

In the existing educational model we can readily locate certain characteristics, which, regardless of the changes and modifications that were occasionally made, remained unchanged and were correctly labeled as the components of the traditional educational system. The first basic characteristic has to do with the role of the teacher, who for years used to be practically the only source of knowledge in the classrooms. The second component has to do with the role of the student, who, within the conventional model, was restricted to a more passive role (lessons attendance, study, taking exams etc.) The training tools (books, notes etc.) that for years formed the two poles of education remained unchanged as to their basic characteristics. One could say that the training process, the way it was established during the years, might be associated with the production line of a commercial product as part of the industrial model of evolution (More Ch., 1997). On the production assembly line we have the subject of the training procedure (the students) going through its pedagogical shaping and knowledge enrichment by the trainers, who play the role of the traditional industrial worker. Utilizing their knowledge and skills in due time and in a predetermined way depending on the production stages, they contribute to the production and development of a learning and pedagogical standard, which has been found to carry the basic characteristics imposed by the market or society demands in different time periods. The introduction of the new technologies of communications and information in the learning areas is a necessary factor for the modernization of the whole system. The question is whether the new training technologies will modify the linear model of education, as we described it above, or just contribute to the modernization of its components, leaving its hard core intact. The development of an open learning environment which will go beyond the linear model of education that was established in the industrial age should not be just a theoretical starting point but also a delimited starting point of efforts carefully planned.

3. The new hybrid type learning environment

3.1 The introduction of information and communication technologies into education sector

The introduction of information and communication technologies into education significantly changes its structure and operation as it has been until now. The basic relationship between educator – learner is reversed as through electronic networks the educational process is transferred to the learner's private space, no matter how many kilometres separate his/her from the educator (DeLoach, 1995). The rapid development of new technological communication and information technology applications (teleconferencing, electronic file transfers, etc.), the electronic interconnection of learning units and the penetration of educational multimedia into the basic body of the learning procedure, establishing is distance learning as the indisputable pioneer of major and radical changes in the wider educational environment (COM (91), 388 final). Through teleconferencing (Retalis, Papaspyrou, Markakis, Skordalakis, 1998) learners can attend organized units of classes and lectures from anywhere they choose and are able to intervene, to ask questions, to exchange notes, reading lists, etc. With a PC and the necessary multimedia applications, a learner can participate in the educational process, acquire knowledge in which he is interested, evaluate his learning ability or even be evaluated from the distance learning centre which will be able to certify his/her knowledge. This living form of the educational process in combination with educational multimedia applications through electronic networks, are literally changing the educational map by offering immeasurable possibilities, which until now were to be found in the realm of desire if not that of fantasy (Rowntree, 1994).

3.2 The meaning and content of the hybrid learning environment

A hybrid learning environment is one in the context of which we try to combine in the best possible way new technological applications – that set the educational process free from its constraints in time and space – and the respective pedagogical references to the basis of the traditional educational procedure school of thought (Anastasiades, 2000).

By the term traditional approach we refer mainly to three points of view.

- The relationship between the educator and the learner is unique and cannot be repeated,
- The educational area is an area for socialization, for promoting collective forms of organisation, an area of competition and noble emulation, an area where human and social bonds develop.
- In the centre of the educational procedure lies the human being and the major universal values.

Aided by the basic information society services, digitised information can be transmitted to the end user via his computer screen thanks to rapid developments in telecommunications and networks.

The integration of all network applications and the basic services in the context of the international Internet makes it the integrated platform for implementing the new educational hybrid environment (Washington DC, 2000).

3.3 The components of the new hybrid environment – The example of a university

The basic characteristics of the new educational environment are the following:

A. Open and distance learning :Conventional educational programmes demanded that learners be present at the place of learning, a fact which used to make it hard for some categories of people to have access to sources of knowledge. The introduction of information and communication technologies in the education sector has significantly changed both the structure of education and the way in which it has worked up to now (Holmberg 1986). Through a networked computer and the necessary hypermedia applications, the learner can participate in the educational process, acquiring the necessary knowledge, evaluating his learning ability while he can also be evaluated from the distance learning centre which will be able to certify his/her knowledge. The application of intelligent teaching systems with the use of advanced tools -Intelligent Agents- (Tecuci, 1998) which recognise some peculiarities and difficulties of the learners and which guide the learner accordingly, create a peculiar personal communication relation between the learner and the teaching system. Through teleconferencing

learners around the world can attend a series of classes and lectures at American or European universities without going anywhere and are able to intervene, to ask questions, to exchange notes, reading lists, etc. Distance learning modifies the vital relationship between educator - learner, as it creates a virtual learning environment, in which the educator's role seems to be degraded as he/she does not retain the predominant role that he/she had in the conventional educational context.

B.Electronic interconnection between places of learning and universities: Until now Universities all over the world were independent units of educational and research efforts which communicated among themselves depending on the relationships developed between their members. The electronic interconnection of universities will contribute to the creation of a virtual area of collaboration and of development of the relations between the members of the university community as well as between learners from all parts of the world, encouraging mobility among academics, the joint development of numbers of research tasks, and the widest possible exchange of views and ideas and subjects of common interest. The failure to widely disseminate findings to other institutions inside or outside of the countries of origin makes inter-scientific cooperation more difficult while also contributing to the waste of human resources and intellectual effort expended by Universities. The creation of a network for Universities and research centres allowing access to their research, scientific announcements and in particular their libraries is considered an immediate priority. In this way directly interest parties can gain access to research in the fields of their choice, come into contact with other researchers and scientists exchanging view and promoting their subjects by encouraging collaboration or other forms of cooperation.

C. The meaning of lifelong learning: The rapid introduction of new technologies in the wider working and social environment, downgrades existing knowledge with incredible velocity resulting in the urgent need for the continuous improvement and upgrading of qualifications so that holders of qualifications can respond to new realities. Life long learning is one of the most important priorities of the new approach to education and implies the need for an ongoing dynamic adjustment of learning skills, and of changes occurring in the labour and social environment. This fact gives the learning process a permanent character since it is something which accompanies people throughout their whole professional and social life.

4. Speculation – Requirements for the development of an open learning environment

The introduction of new educational technologies really defines the conditions for the creation of a new learning environment. It would be wrong to say that the use of new technologies would be sufficient in itself to form an open environment of education, thus reversing the linear traditional model.

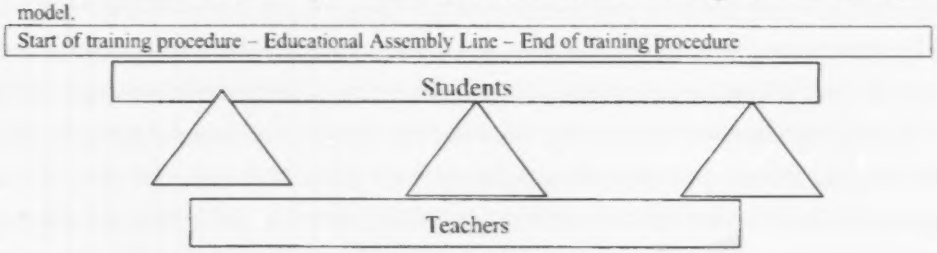

Figure 1: Illustration of the conventional linear model of education.

At this point, it would be useful to describe the most important facts which, combined with the introduction of the training technologies, form the concept of the open learning environment. The first

basic characteristic concerns the evolvement of the teacher's role, in the sense that he should now reconcile to the idea that he will lose the uniqueness of his role, since from an absolute authority of knowledge will evolve into a coordinator of many different sources of knowledge and the respective training tools. At the same time, he needs to get familiar with the idea that many times he will leave his traditional place (outside the assembly line) and will move through the new roles that will be developed either inside or outside the conventional imaginary production line of his educational work. The second basic characteristic of the new model will be about the student, since he will now leave the passive position he was in on a permanent basis inside the training assembly line, and will alternatively take the role of an active factor of the training procedure. This can be achieved through the assignment and presentation of projects, the development of learning activities by the students and the connection of the training procedure with the social and production evolution as an integral part of the training procedure in its new form. The third basic characteristic is about increasing the efficiency of the learning tools that are now available for both the trainers and the trainees. The development of internet sites for the courses, the use of modern training material through the utilization of multimedia, the accessibility to countless sources of data, the use of synchronous and asynchronous communication between students and between teachers create in fact a different environment of incredible potential and alternate learning approaches, mainly at the level of the training methods that can now be used. Finally, the introduction of the philosophy of the longlife training in the learning process also releases it from its temporal limitations, since education, in various forms and aspects, will be with us throughout our professional life. We could say that, under the above conditions, the training procedure in the new hybrid environment is changing its structural parts and particularly:

a)The relation between teacher and student, by establishing the principle of changing roles, either in the conventional classroom or the virtual one or its hybrid form. b)The relation of the teachers with teaching itself, since from a unique source of knowledge they evolve into coordinators of numerous sources of information, changing the learning objective from accessing information to the handling and processing of timely and reliable flow of information. c)The relation of the students with the new environment, where the two factors equation of course attendance – examinations is replaced by the three factors equation of active participation in the training procedure, creation of a personal hybrid learning area, multiple and two-way approaches of evaluation. d) The time frame of the training process, which quits the rationale of starting and ending and enters into the lifetime education.

All the above form the concept of the new hybrid type open educational environment, where the learning procedure is released from its traditional limitations in regards to time, space and methodology, allowing the formation of a new consideration, which on one hand will help abolish the linear model of education, and on the other hand will lay the foundation for new types of methodological approaches in the area of education.

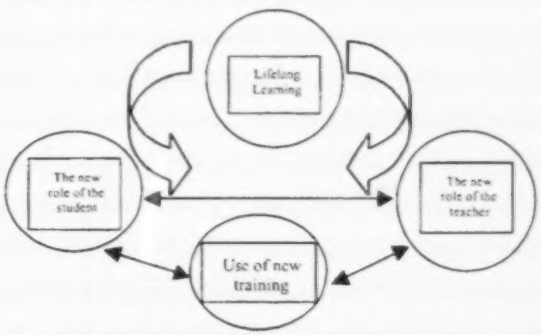

Figure 2: The components of the new hybrid type open learning environment

5. Conclusions

In the context of the emerging Information Society the use of basic teleconferencing, email and electronic file transfer systems in combination with the optimum use of the world wide web are changing the educational landscape as we know it today. The basic characteristics of the new educational environment focus on the process of open, distance learning via electronic connections to universities and on life long learning. The hybrid learning environment is a conceptual and functional integration of traditional educational methods and new modern approaches. Nevertheless, the introduction of new educational technologies and the new hybrid learning environment in particular does not constitute in itself a sufficient and necessary condition to reverse the linear traditional model. The creation of an open learning environment requires the evolvement of the teacher's and the student's roles, as well as the optimum use of the training tools in the direction of changing the learning approaches and training methods, and finally the familiarization of all those involved with the fact that the training procedure will be with us throughout our professional life.

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